



CONCURRENCY AND COMPUTATION PRACTICE & EXPERIENCE

CONTENTS

Volume 21 Number 1

January 2009

Special Issue

Compilers for Parallel Computers 2007 Workshop (CPC 2007)

Guest Editorial	
P. C. Diniz	1
Obituary: Peter Knijnenburg (1961–2007)	
M. O'Boyle and H. Sips	5
Compiler and runtime techniques for software transactional memory optimization	
P. Wu, M. M. Michael, C. von Praun, T. Nakaike, R. Bordawekar, H. W. Cain, C. Cascaval, S. Chatterjee, S. Chiras, R. Hou, M. Mergen, X. Shen, M. F. Spear, H. Y. Wang and K. Wang	7
Writing productive stencil codes with overlapped tiling	
J. Guo, G. Bikshandi, B. B. Fraguela and D. Padua	25
Safe bounds check annotations	
J. von Ronne, A. Gampe, D. Niedzielski and K. Psarris	41
Improving performance of optimized kernels through fast instantiations of templates	
M. A. Khan, H.-P. Charles and D. Barthou	59
Compositional approach applied to loop specialization	
L. Djoudi, J.-T. Acquaviva and D. Barthou	71
Evaluating application mapping scenarios on the Cell/B.E.	
A. L. Varbanescu, H. Sips, K. A. Ross, Q. Liu, A. (Paul) Natsev, J. R. Smith and L.-K. Liu	85
LC-GRFA: global register file assignment with local consciousness for VLIW DSP processors with non-uniform register files	
C.-H. Lu, Y.-C. Lin, Y.-P. You and J.-K. Lee	101

Volume 21 Number 2

February 2009

Design and implementation of parallel approximate inverse classes using OpenMP	
K. M. Giannoutakis and G. A. Gravvanis	115

A dynamic admission control scheme to manage contention on shared computing resources P. Xavier, W. Cai and B.-S. Lee	133
Efficient resource discovery in self-organized unstructured peer-to-peer networks L. Liu, N. Antonopoulos, S. Mackin, J. Xu and D. Russell	159
The Neutralizer: a self-configurable failure detector for minimizing distributed storage maintenance cost Z. Yang, Y. Dai and X. Li	185
A novel reduction approach to analyzing QoS of workflow processes Y. Xia, Q. Zhu, Y. Huang and Z. Wang	205
G-BLAST: a Grid-based solution for mpiBLAST on computational Grids C.-T. Yang, T.-F. Han and H.-C. Kan	225

Volume 21 Number 3

10 March 2009

Special Issue

The Best of CCGrid'2007: A Snapshot of an 'Adolescent' Area

Editorial	
W. Cirne and B. Schulze	257
Grids challenged by a Web 2.0 and multicore sandwich G. Fox and M. Pierce	265
Reparallelization techniques for migrating OpenMP codes in computational grids M. Klemm, M. Bezold, S. Gabriel, R. Veldema and M. Philippsen	281
Topology agnostic hot-spot avoidance with InfiniBand A. Vishnu, M. Koop, A. Moody, A. Mamidala, S. Narravula and D. K. Panda	301
Distributed image processing over an adaptive Campus Grid S. J. Caton, O. F. Rana and B. G. Batchelor	321
Resource selection in grid: a taxonomy and a new system based on decision theory, case-based reasoning, and fine-grain policies L. N. Nassif, J. M. Nogueira and F. V. de Andrade	337
Intelligent scheduling and replication: a synergistic approach A. Elghirani, R. Subrata and A. Y. Zomaya	357
Fault-tolerant execution of large parameter sweep applications across multiple VOs with storage constraints S. Ayyub, D. Abramson, C. Enticott, S. Garic and J. Tan	377
Malleable iterative MPI applications K. El Maghraoui, T. J. Desell, B. K. Szymanski and C. A. Varela	393

Volume 21 Number 4**25 March 2009**

RAVE: the resource-aware visualization environment I. J. Grimstead, N. J. Avis and D. W. Walker	415
Detecting particle swarm optimization Y.-N. Zhang and H.-F. Teng	449
Optimizing process allocation of parallel programs for heterogeneous clusters S. Ichikawa, S. Takahashi and Y. Kawai	475
Cross-domain authorization for federated virtual organizations using the myVocs collaboration environment J. Gemmill, J.-P. Robinson, T. Scavo and P. Bangalore	509
Fault tolerant and prioritized scheduling in OGSA-based mobile Grids A. Litke, D. Halkos, K. Tserpes, D. Kyriazis and T. Varvarigou	533

Volume 21 Number 5**10 April 2009****Special Issue****Web 2.0, Semantics, Knowledge and Grid**

Editorial	
H. Zhuge and Q. Li	557
On web communities mining and recommendation Y. Zhang and G. Xu	561
Using Web 2.0 for scientific applications and scientific communities M. E. Pierce, G. C. Fox, J. Y. Choi, Z. Guo, X. Gao and Y. Ma	583
An abstract layered model for Web-inclusive distributed computing leading to enhancing GRIDSpace with Web 2.0 T. S. Dillon, C. Wu and E. Chang	605
Optimizing description logic reasoning for the large-scale semantic repositories M. Babík and L. Hluchý	635
<i>SQORE</i> : an ontology retrieval framework for the next generation Web R. Ungrangsi, C. Anutariya and V. Wuwongse	651
Adaptation rule learning for case-based reasoning H. Li, X. Li, D. Hu, T. Hao, L. Wenyin and X. Chen	673

A new semantic model with applications in a multimedia database system Q. Li, N. Li, L. Wang and X. Sun	691
A framework for the massive knowledge Web X. Sun, H. Zhuge and Q. Li	705

Volume 21 Number 6**25 April 2009**

Parallel simulation for a fish schooling model on a general-purpose graphics processing unit H. Li, A. Kolpas, L. Petzold and J. Moehlis	725
Service selection and workflow mapping for Grids: an approach exploiting quality-of-service information D. Kyriazis, K. Tserpes, A. Menychtas, I. Sarantidis and T. Varvarigou	739
Coupling integrated Earth System Model components with BFG2 C. W. Armstrong, R. W. Ford and G. D. Riley	767
Designing and implementing lightweight kernels for capability computing R. Riesen, R. Brightwell, P. G. Bridges, T. Hudson, A. B. Maccabe, P. M. Widener and K. Ferreira	793
Trading off logging overhead and coordinating overhead to achieve efficient rollback recovery J.-M. Yang, K. F. Li, W.-W. Li and D.-F. Zhang	819

Volume 21 Number 7**May 2009****Special Issue****Euro-Par 2007**

Editorial L. Bougé and C. Lengauer	855
Schemes for avoiding starvation in transactional memory systems M. M. Waliullah and P. Stenstrom	859
On the connectivity of Bluetooth-based <i>ad hoc</i> networks P. Crescenzi, C. Nocentini, A. Pietracaprina and G. Pucci	875
An algorithm for dissemination and retrieval of information in wireless <i>ad hoc</i> networks H. Miranda, S. Leggio, L. Rodrigues and K. Raatikainen	889
Cooperation in multi-organization scheduling F. Pascual, K. Rzađca and D. Trystram	905

Volume 21 Number 8

10 June 2009

A Special Issue from the Open Grid Forum

Editorial	
C. A. Lee	923
Reliability in grid computing systems:	
C. Dabrowski	927
Interoperation of world-wide production e-Science infrastructures:	
M. Riedel, E. Laure, Th. Soddemann, L. Field, J. P. Navarro, J. Casey, M. Litmaath, J. Ph. Baud, B. Koblitiz, C. Catlett, D. Skow, C. Zheng, P. M. Papadopoulos, M. Katz, N. Sharma, O. Smirnova, B. Kónya, P. Arzberger, F. Würthwein, A. S. Rana, T. Martin, M. Wan, V. Welch, T. Rimovsky, S. Newhouse, A. Vanni, Y. Tanaka, Y. Tanimura, T. Ikegami, D. Abramson, C. Enticott, G. Jenkins, R. Pordes, N. Sharma, S. Timm, N. Sharma, G. Moont, M. Aggarwal, D. Colling, O. van der Aa, A. Sim, V. Natarajan, A. Shoshani, J. Gu, S. Chen, G. Galang, R. Zappi, L. Magnoni, V. Ciaschini, M. Pace, V. Venturi, M. Marzolla, P. Andreetto, B. Cowles, S. Wang, Y. Saeki, H. Sato, S. Matsuoka, P. Uthayopas, S. Sriprayoonsakul, O. Koeroo, M. Viljoen, L. Pearlman, S. Pickles, D. Wallom, G. Moloney, J. Lauret, J. Marsteller, P. Sheldon, S. Pathak, S. De Witt, J. Mencák, J. Jensen, M. Hodges, D. Ross, S. Phatanapherom, G. Netzer, A. R. Gregersen, M. Jones, S. Chen, P. Kacsuk, A. Streit, D. Mallmann, F. Wolf, Th. Lippert, Th. Delaitre, E. Huedo and N. Geddes	961
Profiles for conveying the secure communication requirements of Web services:	
D. Merrill and A. Grimshaw	991
WS-Naming: location migration, replication, and failure transparency support for Web Services:	
A. Grimshaw, M. Morgan and K. Sarnowska	1013
Accessing RDF(S) data resources in service-based Grid infrastructures:	
M. E. Gutiérrez, I. Kojima, S. M. Pahlevi, Ó. Corcho and A. Gómez-Pérez	1029
The HPC basic profile and SAGA: standardizing compute grid access in the open grid forum:	
C. Smith, T. Kielmann, S. Newhouse and M. Humphrey	1053
A general encoding framework for representing network measurement and topology data:	
A. Brown, M. Swany and J. Zurawski	1069
Using clouds to provide grids with higher levels of abstraction and explicit support for usage modes:	
S. Jha, A. Merzky and G. Fox	1087

Volume 21 Number 9**25 June 2009**

Grid performance prediction using state-space model M. Kalantari and M. K. Akbari	1109
Factors affecting the performance of parallel mining of minimal unique itemsets on diverse architectures D. J. Haglin, K. R. Mayes, A. M. Manning, J. Feo, J. R. Gurd, M. Elliot and J. A. Keane	1131
Design and implementation of a high-performance CCA event service I. Gorton, D. Chavarria and J. Nieplocha	1159
Middleware extensions that trade consistency for availability M. Asplund, S. Nadjm-Tehrani and K. Zagar	1181
An evolutionary game algorithm for grid resource allocation under bounded rationality Z.-J. Li and C.-T. Cheng	1205
Parallel eigenvalue reordering in real Schur forms R. Granat, B. Kågström and D. Kressner	1225

Volume 21 Number 10**July 2009****Special Issue****Multi-core Supported Network and System Security**

Editorial Y. Xiang and W. Zhou	1251
An architecture for exploiting multi-core processors to parallelize network intrusion prevention R. Sommer, V. Paxson and N. Weaver	1255
Concurrent workload mapping for multicore security systems B. Soewito and N. Weng	1281
Spam filtering for network traffic security on a multi-core environment R. Islam, W. Zhou, Y. Xiang and A. N. Mahmood	1307
Parallelizing secure linear programming R. Deitos and F. Kerschbaum	1321

How to construct efficient on-line/off-line threshold signature schemes through the simulation approach C.-z. Gao, B. Wei, D. Xie and C. Tang	1351
A scalable key pre-distribution mechanism for large-scale wireless sensor networks A.-N. Shen, S. Guo, H. Y. Chien and M. Guo	1373
Concurrent access control for multi-user and multi-processor systems based on trust relationships I. Agudo, C. Fernandez-Gago and J. Lopez	1389
I/O scheduling and performance analysis on multi-core platforms Z. Liu, W. Qu, H. Li, M. Ruan and W. Zhou	1405

Volume 21 Number 11

10 August 2009

Special Issue

Distributed Simulation, Virtual Environments and Real-time Applications

Editorial A. El Saddik and M. S. M. A. Notare	1419
Design of a virtual environment aided by a model-based formal approach using DEVS A. Boukerche, A. Al Hamidi and M. Zhang	1422
Eye gaze in virtual environments: evaluating the need and initial work on implementation N. Murray, D. Roberts, A. Steed, P. Sharkey, P. Dickerson, J. Rae and R. Wolff	1437
A biologically inspired framework for multimedia service management in a ubiquitous environment M. S. Hossain, A. Alamri and A. El Saddik	1450
Analysing probabilistically constrained optimism M. Lees, B. Logan and G. Theodoropoulos	1467
Causality information and proactive cancellation mechanisms M. Chetlur and P. A. Wilsey	1483
Speeding up simulation applications using WinGrid N. Mustafee and S. J. E. Taylor	1504

Volume 21 Number 12**25 August 2009**

A metric of fairness for parallel job schedulers J. Ngubiri and M. van Vliet	1525
Multiversion concurrency control for the generalized search tree W. Binder, A. Mosincat, S. Spycher, I. Constantinescu and B. Faltings	1547
Accurate garbage collection in uncooperative environments revisited J. Baker, A. Cunei, T. Kalibera, F. Pizlo and J. Vitek	1572
Distributed parallel compilation of MSBNs X. An and N. Cercone	1607
A survey and review of the current state of rollback-recovery for cluster systems A. Maloney and A. Goscinski	1632

Volume 21 Number 13**10 September 2009**

Special Issue
Advanced Strategies in Grid Environments

Editorial B. Schulze, O. Rana and J. N. de Souza	1667
Network-aware selective job checkpoint and migration to enhance co-allocation in multi-cluster systems W. M. Jones	1672
Performance evaluation of an autonomic network-aware metascheduler for Grids A. Caminero, O. Rana, B. Caminero and C. Carrión	1692
WSPE: a peer-to-peer grid programming environment R. B. Rosinha, C. F. R. Geyer and P. K. Vargas	1709
Applying semantics to grid middleware A. C. T. Vidal, F. J. S. Silva, S. T. Kofuji and F. Kon	1725
Multiobjective differential evolution for scheduling workflow applications on global Grids A. K. M. K. A. Talukder, M. Kirley and R. Buyya	1742

Volume 21 Number 14**25 September 2009****Special Issue
Euro-Par 2008****Editorial**

L. Bougé and C. Lengauer	1757
Clock synchronization in Cell/B.E. traces	
M. Biberstein, Y. Harel and A. Heilper	1760
Dynamic file system semantics to enable metadata optimizations in PVFS	
M. Kuhn, J. M. Kunkel and T. Ludwig	1775
A meta-predictor framework for prefetching in object-based DSMs	
J. C. Beyler, M. Klemm, P. Clauss and M. Philippsen	1789
Optimizing multiple conjugate gradient solvers for large-scale systems	
J. C. Sancho and D. J. Kerbyson	1804

Volume 21 Number 15**October 2009**

A high-performance face detection system using OpenMP	
P. E. Hadjidoukas, V. V. Dimakopoulos, M. Delakis and C. Garcia	1819
Increasing data reuse of sparse algebra codes on simultaneous multithreading architectures	
J. C. Pichel, D. B. Heras, J. C. Cabaleiro and F. F. Rivera	1838
An evidence-based iterative content trust algorithm for the credibility of online news	
G. Zeng and W. Wang	1857
A comparative study of Java and C performance in two large-scale parallel applications	
A. Shafi, B. Carpenter, M. Baker and A. Hussain	1882
Randomized gossip algorithms for maintaining a distributed bulletin board with guaranteed age properties	
L. Amar, A. Barak, Z. Drezner and M. Okun	1907
Applications of parallel processing technologies in heuristic search planning: methodologies and experiments	
T. H. Phan, E. Pontelli, T. C. Son and S. T. To	1928

Volume 21 Number 16

November 2009

Special Issue**3rd International Workshop on Workflow Management and
Applications in Grid Environments (WaGe2008)****Editorial:**

J. Chen and M. Cafaro	1961
Adaptive workflow processing and execution in Pegasus	
K. Lee, N. W. Paton, R. Sakellariou, E. Deelman, A. A. A. Fernandes and G. Mehta	1965
Trust-based robust scheduling and runtime adaptation of scientific workflow	
M. Wang, K. Ramamohanarao and J. Chen	1982
Lambda calculus as a workflow model	
P. M. Kelly, P. D. Coddington and A. L. Wendelborn	1999
Generation of similarity knowledge flow for intelligent browsing based on semantic link networks	
X. Luo, Z. Xu, Q. Li, Q. Hu, J. Yu and X. Tang	2018
Optimizing execution path of scientific workflow by gradual removal of QoS constraint violations in Reverse Order	
K. Ren and J. Chen	2033
Benchmarking workflow discovery: a case study from bioinformatics	
A. Goderis, P. Fisher, A. Gibson, F. Tanoh, K. Wolstencroft, D. De Roure and C. Goble	2052
A novel time computation model based on algorithm complexity for data intensive scientific workflow design and scheduling	
J. He, Y. Zhang, G. Huang and C. Pang	2070
An integrated time management model for distributed workflow management systems in Grid environments	
J. Liu, C. Zhou and J. Cao	2084
Building Quick Service Query list (QSQL) to support automated service discovery for scientific workflow	
K. Ren, J. Chen, N. Xiao and J. Song	2099
A grid workflow environment for brain imaging analysis on distributed systems	
S. Pandey, W. Voorsluys, M. Rahman, R. Buyya, J. E. Dobson and K. Chiu	2118

Volume 21 Number 17

10 December 2009

Special Issue

Exploring the Frontiers of Computing Science and Technology:
Adapting Emerging Multi- and Many-core Processors

Editorial:

- S. Zhou, Y. Yesha and M. Halem 2141
- 369 Tflop/s molecular dynamics simulations on the petaflop hybrid supercomputer
'Roadrunner'
T. C. Germann, K. Kadau and S. Swaminarayan 2143
- First experience of compressible gas dynamics simulation on the Los Alamos roadrunner
machine
P. R. Woodward, J. Jayaraj, P.-H. Lin and W. Dai 2160
- The impact of IBM Cell technology on the programming paradigm in the context
of computer systems for climate and weather models
S. Zhou, D. Duffy, T. Clune, M. Suarez, S. Williams and M. Halem 2176
- Accelerating the scalable city
S. Brown, K. Kho, K. Lee and E. Hill 2187
- Interactive direct volume rendering on desktop multicore processors
Q. Wang and J. JaJa 2199
- Observation and analysis of the multicore performance impact on scientific applications
T. A. Simon and J. McGilliard 2213

Volume 21 Number 18

25 December 2009

- Dimensions of coupling in middleware
L. Aldred, W. M. P. van der Aalst, M. Dumas and A. H. M. ter Hofstede 2233
- Market-based grid resource co-allocation and reservation for applications
with hard deadlines
K. Vanmechelen, W. Depoorter and J. Broeckhove 2270

A standards-based Grid resource brokering service supporting advance reservations, coallocation, and cross-Grid interoperability E. Elmroth and J. Tordsson	2298
Deterministic parallel selection algorithms on coarse-grained multicomputers M. Cafaro, V. De Bene and G. Aloisio	2336
Improving energy efficiency of asymmetric chip multithreaded multiprocessors through reduced OS noise scheduling R. E. Grant and A. Afsahi	2355
Mobile agent-based computational steering for distributed applications Y.-C. Chou, D. Ko and H. H. Cheng	2377
Exploiting graphical processing units for data-parallel scientific applications A. Leist, D. P. Playne and K. A. Hawick	2400
Parallelizing dense and banded linear algebra libraries using SMPs R. M. Badia, J. R. Herrero, J. Labarta, J. M. Pérez, E. S. Quintana-Ortí and G. Quintana-Ortí	2438
Exploiting the capabilities of modern GPUs for dense matrix computations S. Barrachina, M. Castillo, F. D. Igual, R. Mayo, E. S. Quintana-Ortí and G. Quintana-Ortí	2457
Parallelized and pipelined hardware implementation of computationally expensive prediction filters L. Gracia and C. Perez-Vidal	2478
A strategy for scheduling tightly coupled parallel applications on clusters H. A. Sanjay and S. S. Vadhiyar	2491

